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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MATISIAK, JENNIFER E

ART UNIT PAPER NUMBER

2811

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/774,869

Applicant(s)

SHI ET AL.

Examiner

Jennifer Matisiak

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 17-26 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7,8, 17 and 23-26 is/are rejected.
- 7) ☒ Claim(s) 6 and 18-22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION***Double Patenting***

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

1. Claims 1-2 and 7 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1 and 7 respectively of prior U.S. Patent No. 6,703,299. This is a double patenting rejection.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 3, 4, 5 and 8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2, 5 and 8 respectively of U.S. Patent No. 6,703,299. Although the conflicting claims are not identical, they are not patentably distinct from each other because each and every limitation in the instant application is recited in the aforementioned patent.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: There is apparently some relationship between "an interstitial film" and a pattern that is possibly transferred to the fillet portion. That relationship is not cited in the claim. This omission has resulted in a gap between necessary structural connections. Furthermore, it appears that the surface roughness and pattern could be characteristic of any arbitrary

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interstitial film surface since the claim is nebulous with respect to the composition/structure of "an interstitial film."

2. Claim 26 recites the limitation "causing the tacky film to release from the die, the fillet and the mounting substrate." There is insufficient antecedent basis for this limitation in the claim. Said claim is dependent upon claim 23, which does not disclose a fillet.

Claim Objections

1. Claim 6 and 18-22 are objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. Claims 7 and 8 are objected to because of the following informalities: the limitation "the tacky film" lacks antecedent basis. Appropriate correction is required.

3. Claim 8 is objected to because of the following informalities: In specifications provided applicant discloses: "In one embodiment, the single step temperature ramp is in a range from about 140 C to about 240 C. Thereafter, ambient cooling of flip-chip assembly 210 may be done." Claim 8 of the amended set of claims under examination discloses "wherein heating includes a single step temperature ramp to a temperature in a range from about 1400 C to about 2400 C." Appropriate correction is required.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Baba et al. (US 2001/0040298), hereinafter Baba.

Regarding claim 1, Baba shows a method of placing a film (25 of Fig. 14) against a flip-chip assembly, wherein flip-chip assembly (39) includes a die (13 of Fig. 16), an electrical connection (19), and a mounting substrate (40); underfilling the die with underfill material (29); curing the underfill material (par [0101]); and after beginning curing the underfill material, removing the film (par [0102]).

Regarding claim 2, Baba teaches a tacky film, (par [0102]).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 23- 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirkpatrick in view of Wang et al. (US 6,000,924), hereinafter Wang, in further view of Baba.

Regarding claim 23, Kirkpatrick teaches a chip-packaging system (Fig. 4, for example) comprising: a die (11), a mounting substrate (12) and an electrical connection (20) disposed between the mounting substrate and the die; a film (21, 38) that is disposed over the die and stretched onto the mounting substrate; and underfill material (26) disposed between the die and the mounting substrate; and an underfill inlet (23, 43) and outlet system (22, 41) that communicates through the film. The difference between Kirkpatrick and the instant invention is "a tacky film that is disposed over the die and stretched onto the mounting substrate" and "a mold press that gives shape to the film." As aforementioned above, Baba teaches a tacky film. Fig. 1 of Wang shows a mold press (4). It would have been obvious to one of ordinary skill at the time the invention was made to modify the invention of Kirkpatrick to include a mold press since it is desirable to shorten the filling time in the process of underfilling the die and substrate. Moreover, it would have been obvious to one of ordinary skill at the time the invention was made to modify the invention of Kirkpatrick to include a tacky film since it is desirable to adhere the protective film to die and substrate so as to not negate the effects of the mold press.

Regarding claim 24, Fig. 4 of Kirkpatrick shows an underfill inlet and outlet system that includes an underfill conduit (42) and vent (40). It would have been obvious

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to incorporate the teachings of Wang and Baba into Kirkpatrick for reasons divulged above.


Regarding claim 25, the difference between Kirkpatrick and the claimed invention is "wherein the underfill material includes a fillet shape disposed between the die and the mounting substrate." Fig. 2 of Wang shows an underfill material with a fillet shape (23) between a die (20) and substrate (21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an underfill having a fillet shape into the teachings of Kirkpatrick since it is desirable to conserve space on a printed circuit board and provide a more secure solder connection. Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Baba into the invention of Kirkpatrick for reasons divulged above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Matisiak whose telephone number is 571-272-2639. The examiner can normally be reached on Business Days 8:30a-5:30p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 517-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Douglas W. Owens
Primary Examiner